

COMP 734 DISTRIBUTED SYSTEMS

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COURSE HOME PAGE



Comp 734: Distributed Systems

Course Overview

This course will provide an implementation-oriented study of distributed systems. Some of the topics covered will include inter-process communication, group communication, synchronization, remote procedure call, peer to peer and centralized sessions, fire-walls, causal broadcast, atomic broadcast, scalability, fault tolerance, replication, and transactions/concurrency control. These are foundational concepts, which are becoming particularly relevant with the emerging areas of cloud computing and distributed games. These concepts will be introduced as layers in a general distributed infrastructure. Your projects will implement new layers and provide alternative implementations of some of the existing layers. When implementing a layer, you will act both as an application programmer, using abstractions of the layers below, and a systems programmer, defining abstractions for the layers above. The number of lines of code required by each layer will be relatively small; however the compositions of these layers will be complex.

The main difference between this course and a distributed systems course is that it will address the design and implementation

<http://www.cs.unc.edu/~dewan/734/current/index.html>



SOFTWARE

Downloads

Beau Halloween Simulation (Eclipse Project, <u>uncompress</u> and link to <u>oeall17.jar</u> or <u>oeall22.jar</u>)	beau project.zip
Coupled Halloween Simulations (Eclipse project, uncompress and link to <u>Beaj</u> project and <u>objecteditor</u>)	CoupledTrickOrTreat.zip
<u>ObjectEditor</u>	oeall17.jar
Latest <u>ObjectEditor</u> (jar)	oeall22
GIPC (<u>Github</u> project library project)	GIPC



GRADE DISTRIBUTION

Exams (Two midterms, no final)	40%
Assignments (Home work)	50%
Class work (10%)	10%
Fudge Factor (Class participation, other factors)	10%



GETTING HELP

Can discuss solutions with each other at a high level

Not at the code level

Sharing of code is honor code violation

Can help each other with debugging as long as it does not lead to code sharing

Assignments may contain solution in English (read only if stuck)



PIAZZA

Getting Help and Class Discussion

We will be using Piazza for class discussion and getting help. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. If you do not get a response within a day or two on Piazza, please send mail.

Before posing a question, please check if this question has been asked before. This will reduce post clutter and reduce our burden. Repeat questions will be ignored by the instructors.

Piazza allows anyone to respond. So if you see a question that you think you can respond to, please do so, as that will reduce my burden and help you "teach" your fellow students.

This will be a form of class participation that will be noted when I allocate my fudge points!

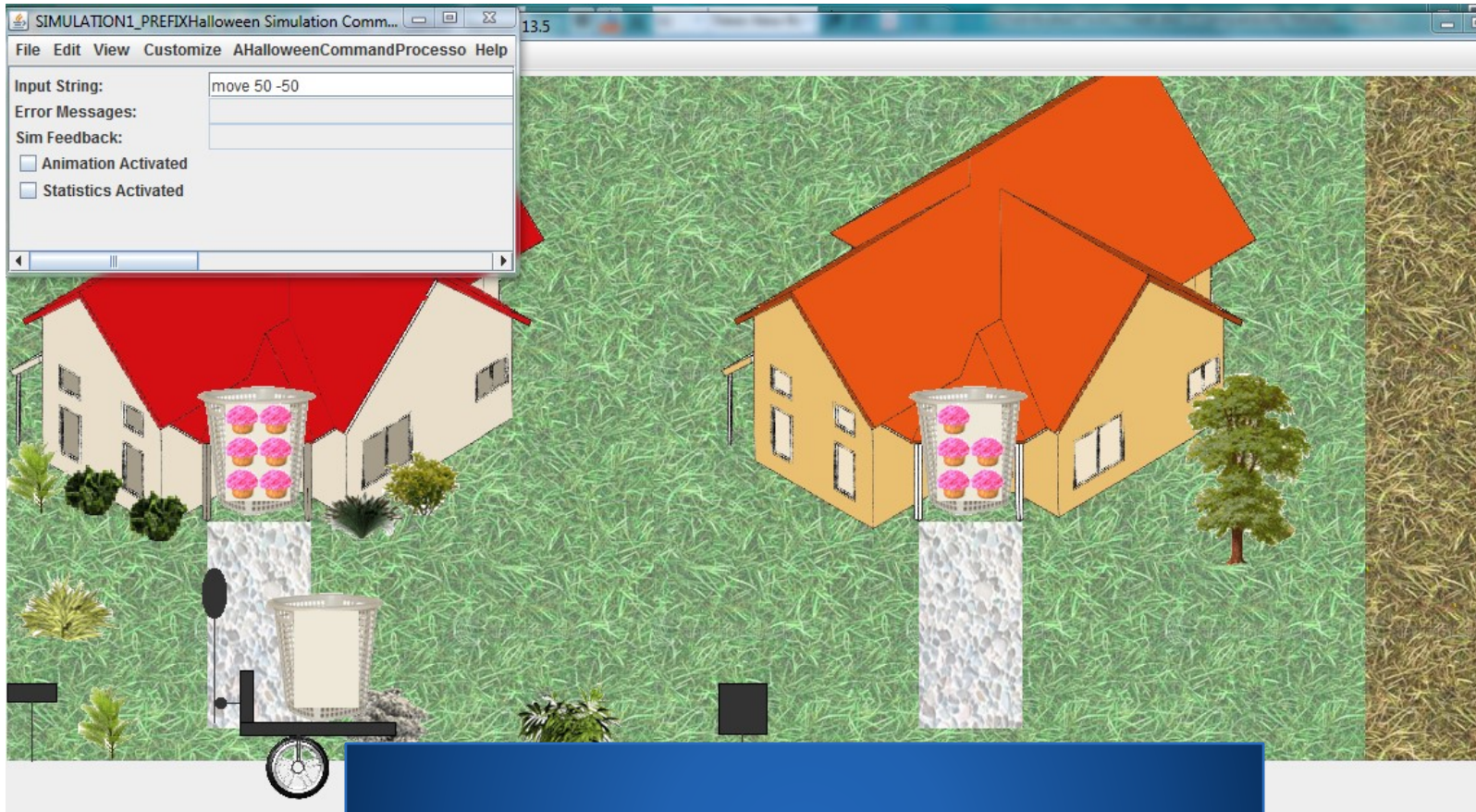
Hope it works well

If you have any problems or feedback for the developers, email team@piazza.com.

Find our class page at: <https://piazza.com/unc/fall2015/comp734/home>



HALLOWEEN SIMULATION



Make Beau Anderson's 401 Halloween implementation distributed



USE NON BLOCKING I/O

Distributed Non Blocking
Simulation

Existing non
distributed
simulation

Java NIO



USE SYNCHRONOUS RMI

Distributed RMI-based
Simulation

Existing non
distributed
simulation

RMI

Java Object Serialization

Sockets



ASYNCHRONOUS GIPC

Distributed RMI-based
Simulation

Existing non
distributed
simulation

GIPC

Java Object Serialization

Java NIO



CUSTOM SERIALIZATION

Distributed RMI-based
Simulation

Existing non
distributed
simulation

GIPC

Custom Serialization (a la Web
Services)

Java NIO



ATOMIC BROADCAST AND FAULT TOLERANCE

Distributed RMI-based
Simulation

Fault Tolerant Atomic Broadcast

Existing non
distributed
simulation

GIPC

Custom Serialization (a la Web
Services)

Java NIO



INVERTED CLASS

Live Atomic Fault Tolerant Lectures

Slides and Youtube videos from Fall 13 offering

Class will involve quizzes, discussion and project work



LECTURES AND ASSIGNMENTS

Unit (Start Date)	Slides	Chapters	Assignment
Introduction	PPT PDF YouTube		
Java Byte Communication	PPT PDF YouTube-1 YouTube-2 YouTube-3		Distributed Non-Blocking Halloween Simulation

Current assignment is on the web - start working ASAP on it

